

IN THE SPECIFICATION:

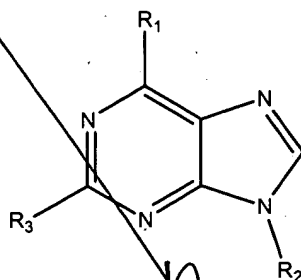
Cancel the paragraph on page 1, lines 9-10 and replace with the following new paragraph:

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This application is a continuation of U.S. patent application Serial No. 09/241,224, filed on February 1, 1999, which is a section 371 application of PCT/US97/13386 filed on August 1, 1997, which is a CIP of U.S. patent application Serial No. 08/692012, filed on August 2, 1996, now U.S. Patent No. 5,866,702.

IN THE CLAIMS

Cancel claim 89 from the application without prejudice.

50. (Once amended) A 2,6,9-trisubstituted purine composition of matter and salts thereof having the following formula:



wherein R₁ is halogen or R'₁-X wherein X = NH, O, S, S(O₂);

R'₁ is alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, CF₃, heteroaryl, heterocyclyl, SR²⁰, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, SO₂NR²⁰COR²¹, SO₂NR²⁰CONR²⁰R²³, SO₂NR²⁰CO₂R²¹, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹,

$\text{NR}^{20}\text{CONR}^{20}\text{R}^{23}$, $\text{N}(\text{R}^{20})\text{C}(\text{NR}^{20})\text{NHR}^{23}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , $\text{OCONR}^{20}\text{R}^{23}$, $\text{OCONR}^{20}\text{SO}_2\text{R}^{21}$, $\text{OCONR}^{20}\text{R}^{23}$, CN , CO_2R^{20} , $\text{CONR}^{20}\text{R}^{23}$, $\text{CONR}^{20}\text{SO}_2\text{R}^{21}$ and COR^{20} ;

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 R_2 is a hydrogen or hydrocarbon selected from the group alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, SR^{20} , $\text{S}(\text{O})\text{R}^{21}$, SO_2R^{21} , $\text{SO}_2\text{NR}^{20}\text{R}^{23}$, $\text{SO}_2\text{NR}^{20}\text{COR}^{21}$, $\text{SO}_2\text{NR}^{20}\text{CONR}^{20}\text{R}^{23}$, $\text{SO}_2\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{COR}^{21}$, $\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{CONR}^{20}\text{R}^{23}$, $\text{N}(\text{R}^{20})\text{C}(\text{NR}^{20})\text{NHR}^{23}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , $\text{OCONR}^{20}\text{R}^{23}$, $\text{OCONR}^{20}\text{SO}_2\text{R}^{21}$, $\text{OCONR}^{20}\text{R}^{23}$, CN , CO_2R^{20} , $\text{CONR}^{20}\text{R}^{23}$, $\text{CONR}^{20}\text{SO}_2\text{R}^{21}$ and COR^{20} ;

R_3 is $-\text{NR}_4\text{R}_5$, wherein R_4 and R_5 are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $\text{S}(\text{O})\text{R}^{21}$, SO_2R^{21} , $\text{SO}_2\text{NR}^{20}\text{R}^{23}$, $\text{SO}_2\text{NR}^{20}\text{COR}^{21}$, $\text{SO}_2\text{NR}^{20}\text{CONR}^{20}\text{R}^{23}$, $\text{SO}_2\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{COR}^{21}$, $\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{CONR}^{20}\text{R}^{23}$, $\text{N}(\text{R}^{20})\text{C}(\text{NR}^{20})\text{NHR}^{23}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , $\text{OCONR}^{20}\text{R}^{23}$, $\text{OCONR}^{20}\text{SO}_2\text{R}^{21}$, $\text{OCONR}^{20}\text{R}^{23}$, CN , CO_2R^{20} , $\text{CONR}^{20}\text{R}^{23}$, $\text{CONR}^{20}\text{SO}_2\text{R}^{21}$ and COR^{20} , with the proviso that either R_4 or R_5 must be substituted with $\text{NR}^{20}\text{R}^{23}$, and when R_3 is not 2-hydroxyethylamino and R_2 is isopropyl, then $\text{R}_1'-\text{X}$ is not benzylamino, m-hydroxybenzylamino, or 3-methylbutylamino, and wherein when R_3 is

selected from 2-dimethylaminoethylamino, and when R_2 is methyl, then $R_1'-X$ is not benzylamino, and wherein when R_1' is 4-methoxybenzylamino and R_2 is isopropyl, then R_3 is not 2-aminoethylamino or 2-aminomethylethanolamino;

R^{20} is a member selected from the group consisting of H, C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl, heterocyclyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, O- C_{1-6} alkyl, CF_3 , aryl, and heteroaryl;

R^{21} is a member selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from the group of halo, heterocyclyl, aryl, heteroaryl, CF_3 , CN, OR^{20} , SR^{20} , $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22} , $SO_2N(R^{20})_2$, $SO_2NR^{20}COR^{22}$, $SO_2NR^{20}CO_2R^{22}$, $SO_2NR^{20}CON(R^{20})_2$, $N(R^{20})_2NR^{20}COR^{22}$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, $NR^{20}C(NR^{20})NHR^{23}$, COR^{20} , CO_2R^{20} , $CON(R^{20})_2$, $CONR^{20}SO_2R^{22}$, $NR^{20}SO_2R^{22}$, $SO_2NR^{20}CO_2R^{22}$, OR^{20} , $OCOR^{20}SO_2R^{22}$, $OC(O)R^{20}$, $C(O)OCH_2OC(O)R^{20}$, and $OCON(R^{20})_2$, and each optional heteroaryl, aryl, and heterocyclyl substituent is optionally substituted with halo, alkyl, CF_3 , amino, mono- or di-alkylamino, alkyl or aryl or heteroaryl amide, $NCOR^{22}$, $NR^{20}SO_2R^{22}$, COR^{20} , CO_2R^{20} , $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$, $OC(O)R^{20}$, $OC(O)N(R^{20})_2$, SR^{20} , $S(O)R^{22}$, SO_2R^{22} , $SO_2N(R^{20})_2$, CN, or OR^{20} ;

R^{22} is a member selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl,

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heterocyclyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, O-C₁₋₆ alkyl, CF₃, aryl, and heteroaryl; and

R²³ is R²¹ or H.

51. (Once amended) A 2,6,9-trisubstituted purine composition of claim 50 wherein:

R₁ is a alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, CF₃, aryl, heteroaryl, heterocyclyl, R²², SR²⁰, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, NR²⁰SO₂R²¹, OR²⁰, CN, CO₂R²⁰, CONR²⁰R²³, and COR²⁰;

R₂ is a hydrogen or hydrocarbon selected from the group substituted alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R²², SR²⁰, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰CONR²⁰R²³, NR²⁰SO₂R²¹, OR²⁰, CN, CO₂R²⁰, CONR²⁰R²³, and COR²⁰;

R₄ and R₅ are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl,

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alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $S(O)R^{21}$, SO_2R^{21} , $SO_2NR^{20}R^{23}$, $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}CONR^{20}R^{23}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN , CO_2R^{20} , $CONR^{20}R^{23}$, and COR^{20} ;

R^{20} is a member selected from the group consisting of H, C_{1-8} alkyl, C_{2-8} alkenyl, C_{2-15} heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, heterocyclyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN , $O-C_{1-6}$ alkyl, CF_3 , aryl, and heteroaryl;

R^{21} is a member selected from the group consisting of C_{1-8} alkyl, C_{2-8} alkenyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from the group of halo, heterocyclyl, aryl, heteroaryl, CF_3 , CN , OR^{20} , SR^{20} , $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22} , $SO_2N(R^{20})_2$, $SO_2NR^{20}COR^{22}$, $SO_2NR^{20}CO_2R^{22}$, $SO_2NR^{20}CON(R^{20})_2$, $N(R^{20})_2$, $NR^{20}COR^{22}$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, $NR^{20}C(NR^{20})NHR^{23}$, COR^{20} , CO_2R^{20} , $CON(R^{20})_2$, $CONR^{20}SO_2R^{22}$, $NR^{20}SO_2R^{22}$, $SO_2NR^{20}CO_2R^{22}$, OR^{20} , $OCONR^{20}SO_2R^{22}$, $OC(O)R^{20}$, $C(O)OCH_2OC(O)R^{20}$, and $OCON(R^{20})_2$, and each optional heteroaryl, aryl, and heterocyclyl substituent is optionally substituted with halo, alkyl, CF_3 , amino, mono- or di-alkylamino, alkyl or aryl or heteroaryl amide, $NCOR^{22}$, $NR^{20}SO_2R^{22}$, COR^{20} , CO_2R^{20} , $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$, $OC(O)R^{20}$, $OC(O)N(R^{20})_2$, SR^{20} , $S(O)R^{22}$, SO_2R^{22} , $SO_2N(R^{20})_2$, CN , or OR^{20} ; and

~~B³~~ R^{22} is a member selected from the group consisting of C_{1-8} alkyl, C_{2-8} alkenyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, heterocyclyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, $O-C_{1-6}$ alkyl, CF_3 , aryl, and heteroaryl.

~~B⁴~~ 52. (Once amended) A 2,6,9-trisubstituted purine composition of claim 50 wherein:

R'_1 is alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, CF_3 , aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $S(O)R^{21}$, SO_2R^{21} , $SO_2NR^{20}R^{23}$, $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , $CONR^{20}R^{23}$, and COR^{20} ;

R_2 is a hydrogen or hydrocarbon selected from the group consisting of alkyl, heterocyclyl, and aryl, each having one to 10 carbon atoms, which alkyl, heterocyclyl, aryl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $S(O)R^{21}$, SO_2R^{21} , $SO_2NR^{20}R^{23}$, $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , $CONR^{20}R^{23}$, and COR^{20} ;

R_4 and R_5 are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 3 substituents

independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $S(O)R^{21}$, SO_2R^{21} , $SO_2NR^{20}R^{23}$, $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , $CONR^{20}R^{23}$, and COR^{20} ;

~~B⁴~~
 R^{20} is a member selected from the group consisting of H, C_{1-8} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, $O-C_{1-6}$ alkyl, CF_3 ;

R^{21} is a member selected from the group consisting of C_{1-8} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 2 substituents independently selected from the group of halo, CF_3 , CN, OR^{20} , SR^{20} , $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22} , $SO_2N(R^{20})_2$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, COR^{20} , CO_2R^{20} , $CON(R^{20})_2$, $NR^{20}SO_2R^{22}$, OR^{20} ; and

R^{22} is a member selected from the group consisting of C_{1-8} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, $O-C_{1-6}$ alkyl, CF_3 , aryl, and heteroaryl.

53. (Once amended) A 2,6,9-trisubstituted purine composition of claim 50 wherein:

R'_1 is a alkyl, heterocyclyl, aryl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, heterocyclyl, heteroaryl, aralkyl, heteroarylalkyl, alkenyl, and alkynyl, are optionally with from 1 to 2 substituents independently selected from the group consisting of halo, CF_3 , aryl, R^{22} , SR^{20} , $S(O)R^{21}$,

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 SO_2R^{21} , $\text{SO}_2\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{COR}^{21}$, $\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , CN , CO_2R^{20} , and $\text{CONR}^{20}\text{R}^{23}$;

R_2 is a hydrogen or hydrocarbon selected from the group alkyl, heterocyclyl, and aryl, each having one to 10 carbon atoms, which alkyl, heterocyclyl, aryl, are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $\text{S(O)}\text{R}^{21}$, SO_2R^{21} , $\text{SO}_2\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{COR}^{21}$, $\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , CN , CO_2R^{20} , $\text{CONR}^{20}\text{R}^{23}$, and COR^{20} ;

R_4 and R_5 are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, aryl, R^{22} , SR^{20} , $\text{S(O)}\text{R}^{21}$, SO_2R^{21} , $\text{SO}_2\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{R}^{23}$, $\text{NR}^{20}\text{COR}^{21}$, $\text{NR}^{20}\text{CO}_2\text{R}^{21}$, $\text{NR}^{20}\text{SO}_2\text{R}^{21}$, OR^{20} , CN , CO_2R^{20} , and $\text{CONR}^{20}\text{R}^{23}$;

R^{20} is a member selected from the group consisting of H, C_{1-8} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN , O-C_{1-6} alkyl, CF_3 ;

R^{21} is a member selected from the group consisting of C_{1-8} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 2 substituents independently selected from the group of halo, CF_3 , CN , OR^{20} , SR^{20} , $\text{N(R}^{20})_2$, $\text{S(O)}\text{R}^{22}$, SO_2R^{22} , $\text{SO}_2\text{N(R}^{20})_2$, $\text{NR}^{20}\text{CO}_2\text{R}^{22}$, $\text{NR}^{20}\text{CON(R}^{20})_2$, COR^{20} , CO_2R^{20} , $\text{CON(R}^{20})_2$, $\text{NR}^{20}\text{SO}_2\text{R}^{22}$, OR^{20} ; and

B⁴ R²² is a member selected from the group consisting of C₁₋₈ alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, O-C₁₋₆ alkyl, CF₃, aryl, and heteroaryl.

B⁵ 55. (Once amended) The 2,6,9-trisubstituted purine composition of claim 52 wherein R₁' is selected from the group consisting of substituted aralkyl, aralkyl, substituted heteroarylalkyl and heteroarylalkyl.

B⁶ 57. (Once amended) A 2,6,9-trisubstituted purine composition of claim 54 wherein:

R'₁ is an aryl, heteroaryl, heterocyclyl, aralkyl, heteroarylalkyl, each having one to 20 carbon atoms, which aryl, heteroaryl, heterocyclyl, aralkyl, heteroarylalkyl, are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, CF₃, aryl, R²², SR²⁰, S(O)R²¹, SO₂R²¹, SO₂NR²⁰R²³, NR²⁰R²³, NR²⁰COR²¹, NR²⁰CO₂R²¹, NR²⁰SO₂R²¹, OR²⁰, CN, CO₂R²⁰, and CONR²⁰R²³;

R₂ is a hydrogen or hydrocarbon selected from the group substituted lower alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl each having one to 10 carbon atoms wherein substitution includes optional substitution with from 1 to 2 substituents independently selected from the group consisting of halo, R²², SR²⁰, S(O)R²¹, SO₂R²¹, NR²⁰R²³, OR²⁰, and CN;

R₄ and R₅ are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, alkenyl, and alkynyl, are optionally substituted with from 1 to 2

substituents independently selected from the group consisting of halo, aryl, R^{22} , SR^{20} , $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , and $CONR^{20}R^{23}$;

R^{20} is a member selected from the group consisting of H, C_{1-8} alkyl, which alkyl is optionally substituted with 1 to 2 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or CN, $O-C_{1-6}$ alkyl, CF_3 ;

R^{21} is a member selected from the group consisting of C_{1-8} alkyl, which alkyl is optionally substituted with 1 to 2 substituents independently selected from the group of halo, CF_3 , CN, OR^{20} , SR^{20} , $N(R^{20})_2$; and

R^{22} is a member selected from the group consisting of C_{1-3} alkyl, aryl, heteroaryl which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl, CN, $O-C_{1-6}$ alkyl, CF_3 .

58. (Once amended) The 2,6,9-trisubstituted purine composition of claim 52 wherein R_1' is selected from the group consisting of aryl, heterocyclyl, heteroaryl, and substituted heteroaryl.

59. (Once amended) The 2,6,9-trisubstituted purine composition of claim 52 wherein R_1' is selected from the group consisting of aryl, unsubstituted pyridyl, and substituted pyridyl, and R_2 is selected from the group consisting of alkyl, substituted alkyl.

60. (Once amended) The 2,6,9-trisubstituted purine composition of claim 51 wherein R_4 and R_5 are each selected from the group consisting of hydrogen, alkyl, heterocyclyl, acyl, aryl, heteroaryl, aralkyl, heteroaralkyl, alkyl alkenyl, alkyl alkynyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl,

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aralkyl, heteroaryl, are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, aryl, heteroaryl, heterocyclyl, R^{22} , SR^{20} , $S(O)R^{21}$, SO_2R^{21} , $SO_2NR^{20}R^{23}$, $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}CONR^{20}R^{23}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN , CO_2R^{20} , $CONR^{20}R^{23}$, and COR^{20} .

61. (Once amended) A 2,6,9-trisubstituted purine composition of claim 60 wherein:

R'_1 is an aryl having 6 carbon atoms;

R_2 is a hydrogen or hydrocarbon selected from the group consisting of substituted lower alkyl, cycloalkyl, and substituted cycloalkyl each having one to 6 carbon atoms wherein the substituted lower alkyl and substituted cycloalkyl are substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R^{22} , $NR^{20}R^{23}$, OR^{20} ;

R_4 and R_5 are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, and heterocyclyl wherein each hydrocarbon has from 1 to 12 carbon atoms, which alkyl, and heterocyclyl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R^{22} , SR^{20} , OR^{20} , $NR^{20}R^{23}$, CN , CO_2R^{20} , and;

R^{20} is a member selected from the group consisting of H, C_{1-8} alkyl;

R^{21} is a member selected from the group consisting of C_{1-3} alkyl, which alkyl is optionally substituted with 1 to 2 substituents independently selected from the group of halo, CF_3 , CN , OR^{20} , SR^{20} , $N(R^{20})_2$; and

R^{22} is a member selected from the group consisting of C_{1-3} alkyl, aryl, heteroaryl which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents

independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl, CN, O-C₁₋₆ alkyl, CF₃.

62. (Once amended) A 2,6,9-trisubstituted purine composition of claim 60

wherein:

R'₁ is an aryl having 6 carbon atoms;

R₂ is isopropyl;

R₄ and R₅ are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, and heterocyclyl wherein each hydrocarbon has from 1 to 12 carbon atoms, which alkyl, and heterocyclyl are optionally substituted with from 1 substituent independently selected from the group consisting of R²², OR²⁰, NR²⁰R²³;

R²⁰ is a member selected from the group consisting of H, C₁₋₂alkyl;

R²¹ is a member selected from the group consisting of C₁₋₃ alkyl;

R²² is a member selected from the group consisting of C₁₋₃alkyl, aryl, which alkyl, aryl, are optionally substituted with 1 substituent independently selected from halo, alkyl, mono- or dialkylamino, CN, CF₃; and

R²³ is R²¹ or H.

63. (Once amended) A 2,6,9-trisubstituted purine composition of claim 60 wherein:

R'₁ is an aralkyl, substituted aralkyl, each having 6-8 carbon atoms wherein substitution includes optional substitution with from 1 to 2 substituents independently selected from the group consisting of halo, CF₃, aryl, R²², NR²⁰R²³, NR²⁰COR²¹, OR²⁰, CN;

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R₂ is a hydrogen or hydrocarbon selected from the group substituted alkyl, cycloalkyl, substituted cycloalkyl each having one to 6 carbon atoms wherein substitution includes optional substitution with 1 substituent independently selected from the group consisting of halo, R²², NR²⁰R²³, OR²⁰;

R₄ and R₅ are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl and heterocyclyl wherein each hydrocarbon has from 1 to 12 carbon atoms, which alkyl and heterocyclyl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R²², SR²⁰, OR²⁰, NR²⁰R²³, CN, CO₂R²⁰, and CONR²⁰R²³;

R²⁰ is a member selected from the group consisting of H, C₁₋₈alkyl;

R²¹ is a member selected from the group consisting of C₁₋₃ alkyl, which alkyl is optionally substituted with 1 to 2 substituents independently selected from the group of halo, CF₃, CN, OR²⁰, SR²⁰, N(R²⁰)₂ and

R²² is a member selected from the group consisting of C₁₋₃alkyl, aryl, heteroaryl which alkyl, aryl, and heteroaryl are optionally substituted with 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl, CN, O-C₁₋₆ alkyl, CF₃.

64. (Once amended) A 2,6,9-trisubstituted purine composition of claim 60 wherein:

R'₁ is -CH₂-phenyl wherein the phenyl ring is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, CF₃, R²², OR²⁰, CN;

R₂ is isopropyl;

B7
R₄ and R₅ are each independently hydrogen, or a hydrocarbon selected from the group consisting of alkyl, and heterocyclyl wherein each hydrocarbon has from 1 to 12 carbon atoms, which alkyl, and heterocyclyl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of R²², OR²⁰, NR²⁰R²³;

R²⁰ is a member selected from the group consisting of H, C₁₋₂alkyl;

R²¹ is a member selected from the group consisting of C₁₋₃ alkyl;

R²² is a member selected from the group consisting of C₁₋₃alkyl, aryl, which alkyl, aryl, are optionally substituted with 1 substituent independently selected from halo, alkyl, mono- or dialkylamino, CN, CF₃; and

R²³ is R²¹ or H.

65. (Once amended) The 2,6,9-trisubstituted purine composition of claim 60 wherein R₁' is selected from the group consisting of aralkyl, substituted pyridylalkyl, and unsubstituted pyridylalkyl;

R₂ is selected from the group consisting of alkyl, which alkyl is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R²², NR²⁰R²³, OR²⁰;

R₄ is a substituted alkyl having from 2 to 6 carbon atoms optionally substituted with from 1 to 3 substituents independently selected from the group consisting of R²², OR²⁰, NR²⁰R²³;

R₅ is selected from the group consisting of hydrogen, alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, are optionally substituted with from 1 to 2

substituents independently selected from the group consisting of halo, aryl, R^{22} , SR^{20} , $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , and $CONR^{20}R^{23}$;

R^{20} is a member selected from the group consisting of H, C_{1-2} alkyl;

R^{21} is a member selected from the group consisting of C_{1-3} alkyl;

R^{22} is a member selected from the group consisting of C_{1-3} alkyl, aryl, which alkyl, aryl, are optionally substituted with 1 substituent independently selected from halo, alkyl, mono- or dialkylamino, CN, CF_3 ; and

R^{23} is R^{21} or H.

66. (Once amended) The 2,6,9-trisubstituted purine composition of claim 60 wherein R_1' is selected from the group consisting of aryl, pyridyl, and substituted pyridyl;

R_2 is selected from the group consisting of alkyl, which alkyl is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R^{22} , $NR^{20}R^{23}$, OR^{20} ;

R_4 is a substituted alkyl having from 2 to 6 carbon atoms optionally substituted with from 1 to 3 substituents independently selected from the group consisting of R^{22} , OR^{20} , $NR^{20}R^{23}$;

R_5 is selected from the group consisting of hydrogen, alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, each having one to 20 carbon atoms, which alkyl, acyl, heterocyclyl, aryl, heteroaryl, aralkyl, are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, aryl, R^{22} , SR^{20} , $NR^{20}R^{23}$, $NR^{20}COR^{21}$, $NR^{20}CO_2R^{21}$, $NR^{20}SO_2R^{21}$, OR^{20} , CN, CO_2R^{20} , and $CONR^{20}R^{23}$;

R^{20} is a member selected from the group consisting of H, C_{1-2} alkyl;

R^{21} is a member selected from the group consisting of C_{1-3} alkyl;

~~67. (Once amended) The 2,6,9-trisubstituted purine composition of claim 60 wherein R_1' is selected from the group consisting of aralkyl, pyridylalkyl, and substituted pyridylalkyl;~~

~~R^{22} is a member selected from the group consisting of C_{1-3} alkyl, aryl, which alkyl, aryl, are optionally substituted with 1 substituent independently selected from halo, alkyl, mono- or dialkylamino, CN, CF_3 ; and~~

~~R^{23} is R^{21} or H.~~

~~R_2 is selected from the group consisting of alkyl, which alkyl is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, R^{22} , and OR^{20} ;~~

~~R_4 and R_5 are each alkyl having from 2 to 6 carbon atoms substituted with 1 substituent independently selected from the group consisting of R^{22} , $NR^{20}R^{23}$, and OR^{20} ;~~

~~R^{20} is a member selected from the group consisting of H, C_{1-2} alkyl;~~

~~R^{21} is a member selected from the group consisting of C_{1-3} alkyl;~~

~~R^{22} is a member selected from the group consisting of C_{1-3} alkyl; and~~

~~R^{23} is R^{21} or H.~~

~~72. (Once amended) The 2,6,9-trisubstituted purine composition of claim 60 wherein R_1' is selected from the group consisting of aryl, pyridyl, and substituted pyridyl, R_2 is selected from the group consisting of lower alkyl, substituted lower alkyl, and alkyl cycloalkyl, and R_4 and R_5 are each a substituted lower alkyl having from 2 to 6 carbon atoms.~~

76. (Once amended) The 2,6,9-trisubstituted purine composition of claim 50
 selected from the group consisting of [2-((2-hydroxyethyl)[9-(methylethyl)-6-({[4-
 (trifluoromethyl)phenyl]methyl}amino)purin-2-yl)amino]ethan-1-ol,] (((2S)oxolan-2-
 yl)methyl)(6-({[4-fluorophenyl]methyl}amino)-9-(methylethyl)purin-2-yl)amine,
 [((2R)oxolan-2-yl)methyl)(6-({[4-fluorophenyl]methyl}amino)-9-(methylethyl)purin-2-
 yl)amine, (2-aminoethyl)(6-({[3,5-dichlorophenyl]methyl}amino)-9-(methylethyl)purin-2-
 yl)amine, (2-aminoethyl)[6-({[4-chloro-3-(trifluoromethyl)phenyl]methyl}amino)-9-
 (methylethyl)purin-2-yl]amine, [-(6-({[4-chlorophenyl]methyl}amino)-9-
 (methylethyl)purin-2-yl)amino]-3-methylbutanamide, (2-amino-2-methylpropyl)(6-({[4-
 chlorophenyl]methyl}amino)-9-(methylethyl)purin-2-yl)amine, 3-(2-[bis(2-
 hydroxyethyl)amino]-6-({[4-chlorophenyl]methyl}amino)purin-9-yl)butan-2-one,
 2-[(6-({[4-chlorophenyl]methyl}amino)-9-(methylethyl)purin-2-yl)amino]-3-
 methylbutan-1-ol, 4-[(2-[(2-aminoethyl)amino]-9-(methylethyl)purin-6-
 yl)amino)methyl]benzenesulfonamide, [2-[(2-hydroxyethyl)(6-({[4-
 methoxyphenyl]methyl}amino)-9-(methylethyl)purin-2-yl)amino]ethan-1-ol,] [2-((2-
 hydroxyethyl){9-(methylethyl)-6-[(4-phenylphenyl)amino]purin-2-yl}amino)ethan-1-
 ol,] {2-[(2-amino-2-propyl)amino]-9-(methylethyl)purin-6-yl}[(4-
 chlorophenyl)methyl]amine,
 {2-[(2-aminoethyl)amino]-9-(methylethyl)purin-6-yl}[(4-chlorophenyl)methyl]amine,
 {2-[(2-aminopropyl)amino]-9-(methylethyl)purin-6-yl}[(4-chlorophenyl)methyl]amine and 2-
 [(2-aminoethyl)(6-({[4-chlorophenyl]methyl}amino)-9-(methylethyl)purin-2-yl)amino]ethan-1-
 ol.

78. (Once amended) The 2,6,9-trisubstituted purine composition of claim [77] 60

B'10
wherein R₁' is selected from the group of compounds consisting of [4-methoxybenzyl,]
4-phenylbenzyl, 4-methoxybenzyl, 4-biphenyl, 3-methoxybenzyl, 4-(2-thienyl)benzyl, 4-
(4-methyl)phenylbenzyl, 4-(4-trifluoromethyl)phenylbenzyl, 4-(4-nitrilo)phenylbenzyl, 4-
(2-pyridinyl)benzyl, piperonyl, 3-thiomethoxyphenyl, 4-thiomethoxyphenyl and 4-
bromophenyl.

B'11
81. (Once amended) A method for treating a disease in a mammal that is characterized
by abnormal cell proliferation comprising administering a therapeutically effective amount of the
composition of claim 50 to the mammal.

B'12
Add the following new claim 91 to the application:

91. (New) The use of the compound of claim 50 as an antifungal agent.

REMARKS

Claims 50-88 and 90-91 are pending in the application. Many of the application
claims have been amended to overcome the Examiner's claim objections and rejections.
Claim 89 has been cancelled from the application and replaced with new claim 91. The
application Abstract has been amended and the specification has been amended to recite
the complete application parentage and to correct problems with the specification that the
Examiner identified in the Official Action. The Abstract, specification and claim
amendments do not add new matter to the specification. A marked up version of the
amended claims is attached as Appendix A to this reply pursuant to 37 CFR 1.121.

The Examiner asserted that certain portions of the claimed invention and
specification are new matter that was not part of the earliest parent applications and,
therefore, is entitled to a February 1, 1999 filing date. The Applicants disagree with the